

IN THE UNITED STATES PATENT AND TRADEMARK OFFICE

Applicant: Amit S. Kelkar et al. PATENT APPLICATION
Serial No.: Group Art Unit:
Filed: Examiner:
For: METHOD OF FORMING PRE-METAL DIELECTRIC FILM
ON A SEMICONDUCTOR SUBSTRATE INCLUDING FIRST
LAYER OF UNDOPED OXIDE OF HIGH OZONE:TEOS
VOLUME RATIO AND SECOND LAYER OF LOW OZONE
DOPED BPSG

Information Disclosure Statement

Mail Stop Reissue
Commissioner for Patents
Alexandria, VA 22313-1450

Sir:

The following information is submitted in compliance with Applicants' duty of disclosure under 37 CFR § 1.56. A copy of each reference is enclosed.

U.S. Patents

<u>Pat. No.</u>	<u>Inventor</u>	<u>Grant Date</u>
6,218,268	Xia et al.	Apr. 17, 2001
6,091,121	Oda	Jul. 18, 2000
6,090,675	Lee et al.	Jul. 18, 2000
6,013,584	M'Saad	Jan. 11, 2000
5,994,237	Becker et al.	Nov. 30, 1999
5,869,403	Becker et al.	Feb. 09, 1999
5,607,880	Suzuki et al.	Mar. 04, 1997
5,518,962	Murao	May 21, 1996
5,491,108	Suzuki et al.	Feb. 13, 1996
5,354,387	Lee et al.	Oct. 11, 1994
5,332,694	Suzuki	Jul. 26, 1994
5,314,845	Lee et al.	May 24, 1994

5,271,972	Kwok et al.	Dec. 21, 1993
5,166,101	Lee et al.	Nov. 24, 1992

Foreign Patent Documents

<u>Publication No.</u>	<u>Publication Date</u>	<u>Country</u>
0 939 433 A2	Sept. 1, 1999	EPO
WO 99/57329	Nov. 11, 1999	PCT
0 435 161 A1	July 3, 1991	EPO

Other Reference

Wolf et al, Silicon Processing for the VLSI Era,
Vol. 1, Lattice Press, 1986, pp. 182-191.

CERTIFICATE OF EXPRESS MAILING

I hereby certify that this paper (along with any paper referred to as being attached or enclosed) is being deposited with the United States Postal Service on the date shown below with sufficient postage as Express Mail Label EV342173155US in an envelope addressed to: Mail Stop Reissue, Commissioner for Patents, Alexandria, VA 22313-1450.

Signed: Merle P. Garcia

Typed Name: Merle P. Garcia

Date: June 25, 2003

Respectfully submitted,



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FORM PTO-1449				Atty. Docket No. ATM-247		Serial No.	
LIST OF PRIOR ART CITED BY APPLICANT				Applicant: Amit S. Kelkar et al.			
				Filing Date:		Group:	
U.S. PATENT DOCUMENTS							
Examiner Initial*	Document Number	Grant Date	Name	Class	Sub Class	Filing Date	
AA	6,218,268	04/17/01	Xia et al.	438	435		
AB	6,091,121	07/18/00	Oda	257	408		
AC	6,090,675	07/18/00	Lee et al.	438	301		
AD	6,013,584	01/11/00	M'Saad	438	783		
AE	5,994,237	11/30/99	Becker et al.	438	734		
AF	5,869,403	02/09/99	Becker et al.	438	738		
AG	5,607,880	03/04/97	Suzuki et al.	437	195		
AH	5,518,962	05/21/96	Murao	437	195		
AI	5,491,108	02/13/96	Suzuki et al.	437	192		
AJ	5,354,387	10/11/94	Lee et al.	148	33.3		
AK	5,332,694	07/26/94	Suzuki	437	195		
FOREIGN PATENT DOCUMENTS							
Examiner Initial*	Document Number	Publ. Date	Country	Class	Sub Class	Translation Yes No	
AL	0939433 A2	09/01/99	EPO				
AM	WO99/53729	11/11/99	PCT				
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)							
	AN	Wolff et al., Silicon Processing for the VLSI Era, Vol. 1, Lattice Press, 1986, pp. 182-191.					
	AO						
	AP						
EXAMINER:				DATE CONSIDERED:			
*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.							

FORM PTO-1449			Atty. Docket No. ATM-247		Serial No.	
LIST OF PRIOR ART CITED BY APPLICANT			Applicant: Amit S. Kelkar et al.			
			Filing Date:		Group:	
U.S. PATENT DOCUMENTS						
Examiner Initial*	Document Number	Grant Date	Name	Class	Sub Class	Filing Date
AA	5,314,845	05/24/94	Lee et al.	437	238	
AB	5,271,972	12/21/93	Kwok et al.	427	579	
AC	5,166,101	11/24/92	Lee et al.	437	238	
AD						
AE						
AF						
AG						
AH						
AI						
AJ						
FOREIGN PATENT DOCUMENTS						
Examiner Initial*	Document Number	Publ. Date	Country	Class	Sub Class	Translation Yes No
AK	0435161 A1	07/03/91	EPO			
AL						
OTHER ART (Including Author, Title, Date, Pertinent Pages, Etc.)						
AM						
AN						
AO						
EXAMINER:				DATE CONSIDERED:		
*Examiner: Initial if citation considered, whether or not citation is in conformance with MPEP 609; draw line through citation if not in conformance and not considered. Include copy of this form with next communication to applicant.						

INTERNATIONAL SEARCH REPORT

In tional Application No

PCT/US 99/08973

A. CLASSIFICATION OF SUBJECT MATTER
IPC 6 C23C16/40 C23C16/44

According to International Patent Classification (IPC) or to both national classification and IPC

B. FIELDS SEARCHED

Minimum documentation searched (classification system followed by classification symbols)

IPC 6 H01L C23C

Documentation searched other than minimum documentation to the extent that such documents are included in the fields searched

Electronic data base consulted during the international search (name of data base and, where practical, search terms used)

C. DOCUMENTS CONSIDERED TO BE RELEVANT

Category *	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No.
X	EP 0 307 995 A (STICHTING KATHOLIEKE UNIV) 22 March 1989 (1989-03-22)	1
Y	figure 1	11
Y	US 5 648 175 A (RUSSELL KATHLEEN ET AL) 15 July 1997 (1997-07-15) claims 1,6,12	11
X	PATENT ABSTRACTS OF JAPAN vol. 018, no. 077 (E-1504), 8 February 1994 (1994-02-08) & JP 05 291144 A (RYODEN SEMICONDUCTOR SYST ENG KK;OTHERS: 01), 5 November 1993 (1993-11-05) abstract	1
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☒ Further documents are listed in the continuation of box C.

☒ Patent family members are listed in annex.

* Special categories of cited documents:

"A" document defining the general state of the art which is not considered to be of particular relevance

"E" earlier document but published on or after the international filing date

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"O" document referring to an oral disclosure, use, exhibition or other means

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"T" later document published after the international filing date or priority date and not in conflict with the application but cited to understand the principle or theory underlying the invention

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"Y" document of particular relevance; the claimed invention cannot be considered to involve an inventive step when the document is combined with one or more other such documents, such combination being obvious to a person skilled in the art.

"Z" document member of the same patent family

Date of the actual completion of the international search

18 August 1999

Date of mailing of the international search report

26/08/1999

Name and mailing address of the ISA

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Königstein, C

INTERNATIONAL SEARCH REPORT

In International Application No

PCT/US 99/08973

2. (Continuation) DOCUMENTS CONSIDERED TO BE RELEVANT

Category	Citation of document, with indication, where appropriate, of the relevant passages	Relevant to claim No
A	<p>WO 97 24755 A (LAM RES CORP ; IBM (US); SIEMENS AG (DE)) 10 July 1997 (1997-07-10) the whole document -----</p>	5,6,9,10

INTERNATIONAL SEARCH REPORT

Information on patent family members

In ternational Application No

PCT/US 99/08973

Patent document cited in search report		Publication date	Patent family member(s)		Publication date
EP 0307995	A	22-03-1989	NL	8702096 A	03-04-1989
			JP	1187808 A	27-07-1989
			US	4916089 A	10-04-1990
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JP 05291144	A	05-11-1993	NONE		
<hr/>					
WO 9724755	A	10-07-1997	US	5770469 A	23-06-1998
			EP	0870324 A	14-10-1998
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European
Patent Office

EUROPEAN SEARCH REPORT

Application Number

EP 90 12 4837

DOCUMENTS CONSIDERED TO BE RELEVANT					
Category	Citation of document with indication, where appropriate, of relevant passages	Relevant to claim	CLASSIFICATION OF THE APPLICATION (Int. Cl.5)		
A	EP-A-0 272 140 (APPLIED MATERIALS INC.) * column 26, line 35 - column 29, line 6 * * column 33, lines 1 - 40; claim 45; figures 18-20 * - - - -	1,2	H 01 L 21/316 C 23 C 16/40		
A	EP-A-0 212 691 (FOCUS SEMICONDUCTOR SYSTEMS) * columns 13 - 16; figures 1, 2 * - - - -	1,2			
A	INTERNATIONAL ELECTRON DEVICES MEETING TECHNICAL DIGEST 03 December 1989, WASHINGTON D.C. pages 669 - 672; H. KOTANI et al.: "Low-temperature APCVD oxide using TEOS-ozone chemistry for multilevel interconnections" * page 669, right-hand column - page 670, left-hand column; figures 3, 4 * - - - -	1			
A	US-A-3 647 663 (JAMES A. CUNNINGHAM ET AL.) * column 2, lines 35 - 59; claims 1, 3 * - - - - -	1			
The present search report has been drawn up for all claims			TECHNICAL FIELDS SEARCHED (Int. Cl.5) H 01 L C 23 C		
Place of search Berlin		Date of completion of search 13 March 91	Examiner KLOPFENSTEIN P R		
<table border="0"><tr><td>CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background : non-written disclosure P: intermediate document T: theory or principle underlying the invention</td><td>E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document</td></tr></table>				CATEGORY OF CITED DOCUMENTS X: particularly relevant if taken alone Y: particularly relevant if combined with another document of the same category A: technological background : non-written disclosure P: intermediate document T: theory or principle underlying the invention	E: earlier patent document, but published on, or after the filing date D: document cited in the application L: document cited for other reasons &: member of the same patent family, corresponding document
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